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10/518,444

12/20/2004

Wataru Matsumoto

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BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

RIZK, SAMIR WADIE

ART UNIT

PAPER NUMBER

2133

MAIL DATE

DELIVERY MODE

12/18/2006

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

SUPPLEMENTAL
Office Action Summary

Application No.

10/518,444

Applicant(s)

MATSUMOTO, WATARU

Examiner

Sam Rizk

Art Unit

2133

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 August 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

SUPPLEMENTAL ACTION

1. The purpose of this supplemental office action is to correct the following two errors:
 - a) The double patenting rejection under statutory double patenting should have been rejected under nonstatutory double patenting.
 - b) In re Schneller is misquoted on page 4 of the office action filed on 11/9/2006 and is withdrawn.
2. Below is the corrected office action to replace the office action filed on 11/9/2006.

DETAILED ACTION

- Response to the applicant's amendment dated 8/8/2006
- Amended claims 1-12 have been submitted for examination
- Amended claims 1-12 have been rejected

Specification

3. In view of the applicant-amended specification, see pages 3-6, filed on 8/8/2006 all objections to the specification are withdrawn.
4. In view of the applicant amended claims 7 and 12, filed on 8/8/2006, all objections to the claims 7 and 12 are withdrawn.

Drawings Objections

5. In view of the applicant amended drawings filed on 8/8/2006, all objections to the drawings are withdrawn.

Double Patenting

6. In view of the applicant cancelled claims 1-10 of copending application no. 10/482,815, all double patenting rejection of claims 1,2,7,11 and 12 are withdrawn.
7. On further examination, new double patent rejection with patent no. 7,089,479 issued to same assignee with the instant application.

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

8. Claims 1,2,7,11 and 12 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 7,089,479. Although the conflicting claims are not identical, they are not patentably distinct from each other.

9. Claims 1,2,7,11 and 12 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-10 of U.S. Patent No. 7,089,479. Although the conflicting claims are not identical, they are not patentably distinct from each other.

10. Claims 1,2,7,11 and 12 are provisionally rejected on the ground of nonstatutory double patenting over claims 1-12 of copending Application No. 10/520,061.

This is a provisional double patenting rejection since the conflicting claims have not yet been patented.

The subject matter claimed in the instant application is fully disclosed in the referenced copending application and would be covered by any patent granted on that copending application since the referenced copending application and the instant application are claiming common subject matter.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 1-12 are rejected under 35 U.S.C. 102(b) as being anticipated by Bond et al. publication titled, low density Parity Check Codes based on Sparse Matrices with no Small Cycles, Cryptography and coding, 1997, pages 46-58, (Hereinafter Bond), (copy is provided in its entirety).

12. In regard to claim 1, Bond teaches;

- (Original) A method of generating a check matrix for a low-density parity-check code in which at least one of weights of a column and a row are not uniform, the method comprising:
 - determining a code length and a coding rate;
 - determining the weights of the row and the column to determine a basic matrix that satisfies conditions that "the weights of the row and the column are constant" and "number of cycles is equal to or more than six";
 - selecting a maximum value of the weight of the column that satisfies a condition of " $2 < \text{maximum value of the weight of the column} \leq \text{number of 1s within columns in the basic matrix}$ ";
 - searching provisionally an ensemble of the weights of the row and the column weights of the low-density parity-check code via optimization based on Gaussian approximation in a state that number of the weights of the row are limited to continuous two kinds to determine an optimum set of the weights of the row;
 - deleting the rows sequentially from a bottom of the basic matrix considering number of rows after a division;
 - searching provisionally an ensemble of the weights of the row and the column of the low-density parity-check code via optimization based on Gaussian approximation, using the set of the weights of the

row as a fixed parameter, to determine an optimum set of the weights of the column;

- searching an optimal ensemble of the weights of the row and the column of the low-density parity-check code via optimization based on Gaussian approximation, using the set of the weights of the row and the column as a fixed parameter; and
- dividing at random the weights of the row and the column of the basic matrix after deleting the rows in a predetermined procedure based on a final ensemble.

(Note: Section 2.1, pages 48-50 in Bond)

13. Claim 2 is rejected for the same reasons as per claim 1.

14. In regard to claim 3, Bond teaches:

- (Original) The method according to claim 2, wherein the specific relational equation used at the rearranging is generated such that the weights within the matrix are arranged at a higher position within columns.

(Note: MATLAB routine, page 48 in Bond)

15. In regard to claim 4, Bond teaches:

- (Original) The method according to claim 2, wherein in the Gaussian approximation, the optimal ensemble of the weights of the row and the column, which minimizes a threshold, is searched in a single linear

programming such that a Gaussian noise becomes maximum in a state that the coding rate is fixed.

(Note: Section 4, experimental results, page 53 in Bond)

16. In regard to claim 5, Bond teaches:

- (Original) The method according to claim 2, wherein at the searching the optimum ensemble of the row and the column of the low-density parity-check code, a weight distribution in the ensemble is adjusted such that a total number of the weights in weight unit is equal to an integer and a sum of the total number of the weights in the weight unit is equal to a total number of 1 s in the Euclidean geometry code, and at the dividing, the dividing is performed based on the ensemble after an adjustment.

(Note: Section 2.2, the general case , pages (50-53); in Bond)

17. In regard to claim 5, Bond teaches:

- (Original) The method according to claim 2, wherein at the dividing, a Latin square of basic random sequence is generated, and a weight of 1 is extracted from each of the rows and each of the columns in the basic matrix after deleting the row, thereby dividing each of the rows and each of the columns at random based on the Latin square.

(Note: Section 2.2, the general case , pages (50-53), in Bond)

18. Claim 7, 8, 11 and 12 are rejected for the same reasons as in claim 1.

19. Claim 9 is rejected for the same reasons as per claim 5.

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20. Claim 10 is rejected for the same reasons as per claim 6.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Rizk whose telephone number is (571) 272-8191. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronics Business Center (EBC) at 866-217-9197 (toll-free)

Sam Rizk, MSEE, ABD

Examiner

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12/8/06

[Handwritten signature]
ALBERT DECADY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2100